IN THE CLAIMS

1-103 (canceled)

104. (new) A mixture comprising:

A) at least one electrically conductive or semiconducting element or compound selected from the group consisting of a), b), or c), wherein the mixture comprises at least 4.5 to 60% by weight of a), wherein

a) is at least one electrically conductive or semiconducting metallic particle selected from the group consisting of tungsten, molybdenum, tantalum and niobium and alloys thereof,

b) is at least one electrically conductive or semiconducting polymeric compounds or any mixtures of these or derivatives thereof; and

c) is at least one electrically conductive or semiconducting amine-or ammonium-containing compound;

wherein A) is present in an amount of form 4.5 to 70wt% of the mixture.

and

B) at least one binder;

C) at least one crosslinking agent, a photoinitiator, or a mixture thereof whereby the content of said binder or crosslinking agent is in the range form 16 to 42% by weight, and

D) at least one of an organic solvent or water;

wherein the total weight of component A) is from 0.5 to 70 wt.% based on the total weight of the mixture, and wherein the mixture is free of carbon black and wherein a) is capable of sliding and the mixture is a liquid, is free of carbon black, and is for a chromate free process.

105. (new) A mixture according to claim 104, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.1 to 4.0 microns.

106. (new) A mixture according to claim 104, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.2 to 4.0 microns.

107. (new) A mixture according to claim 104, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.1 to 4.5 microns.

108. (new) A mixture according to claim 106, wherein said average particle size d_{50} ranges from 0.2 to 3.5 microns.

109. (new) A mixture according to claim 105, wherein at least 10 wt.% of the electrically conductive or semiconducting hard particles a) are oxides or phosphides substantially comprising at least one of aluminum, iron, cobalt, copper, manganese, molybdenum, nickel, niobium, tantalum, titanium, vanadium, tungsten, zinc or tin

110. (new) A mixture according to claim 106, wherein at least 10 wt.% of the electrically conductive or semiconducting hard particles a) are oxides or phosphides substantially comprising at least one of aluminum, iron, cobalt, copper, manganese, molybdenum, nickel, niobium, tantalum, titanium, vanadium, tungsten, zinc or tin

111. (new) A mixture according to claim 104, wherein the electrically conductive or/and semiconducting hard particles a) comprise substances based on compounds or mixture of compounds with or of spinels, or substances based on borides, carbides, oxides, phosphates,

phosphides, silicates, silicides or particles having an electrically conductive coating or a mixture thereof or a compound thereof.

112. (new) A mixture according to claim 104, wherein at least 10 wt.% of the electrically conductive or semiconducting hard particles a) are oxides or phosphides substantially comprising at least one of aluminum, iron, cobalt, copper, manganese, molybdenum, nickel, niobium, tantalum, titanium, vanadium, tungsten, zinc or tin.

113. (new) A mixture according to claim 104, wherein component a) comprises molybdenum.

114. (new) A mixture according to claim 104, wherein compound b) is at least one of polyaniline, polypyrrote, polythiophenene or a mixture thereof.

115. (new) A mixture according to claim 104, containing at least one electrically conductive or semiconducting compound c), that is a tertiary amine, an ammonium compound or derivative thereof.

116. (new) A mixture according to claim 104, comprising not more than 1.5 wt.% of wax or of substances having wax-like properties.

117. (new) A process comprising applying the mixture of claim 104 to a substrate, optionally drying or at least partly crosslinking the mixture as a result of which a coating of which the average layer thickness in the dry state is not more than 6 µm, measured in the dry state microscopically on a ground cross-section, is produced on the substrate, wherein the process is chromium free, to yield a coated substrate.

118. (new) The process of claim 107, wherein the substrate is precoated.

119.. (new) A process according to claim 117, wherein the electrically conductive or/and semiconducting hard particles a) are ground by themselves.

120. (new) A process according to claim 117, wherein the coating is produced with a mixture in which the mixture of all the types of particles a) has a particle passage value d_{80} which is no greater than the layer thickness of the dry coating produced therewith.

121. (new) A process according to claim 117, wherein on grinding of the electrically conductive or/and semiconducting hard particles a), the over-sized particles are predominantly comminuted, so that a narrower particle size distribution arises.

122. (new) A process according to claim 117, wherein the particle size passage value d_{99} of the electrically conductive or semiconducting hard particles a) is not substantially greater than, no greater than or only slightly less than the average thickness of the coating.

123. (new) A process according to claim 117, wherein the applied mixture is dried, stoved, irradiated with free radicals or heated in order to form a thoroughly crosslinked, corrosion-resistant, viscoelastic coating.

124. (new) A process according to claim 117, wherein the resultant coating has a thickness of less than 10 μm.

125. (new) A process according to claim 117, wherein the mixture is free or substantially free from organic lubricants.

126. (new) A process according to claim 117, wherein the substrate comprises at least one metal or metal alloy.

127. (new) A process according to claim 117, wherein the mixture according to the invention is applied directly to a pretreatment coating or said substrate.

128. (new) The product prepared by the process of claim 117.

129. (new) A metal substrate coated with product of claim 128.

130. (new) A process according to claim 117, wherein said mixture is free from at least one of PTFE, silicone, inorganic acids, silicone oil, organic acids, heavy metals, arsenic, lead, cadmium, chromium, cobalt, copper or nickel.

131. (new) A process according to claim 117, wherein said substrate comprises at least one of aluminum, iron, magnesium or steel.

132. (new) The mixture of claim 111, further comprising metal particles or metal alloy particles.

133. (new) The mixture of claim 132, wherein said metal particles or metal alloy particles comprise at least one of aluminum, iron, cobalt, copper, molybdenum, nickel, niobium, silver, tantalum, titanium, vanadium, tungsten, zing or tin.

134. (new) The mixture of claim 104, further comprising E) at least one component chosen from d), f) or g), wherein

d) is at least one post-crosslinking compound,

f) is at least one corrosion protection pigment based on a silicate, whereby the corrosion protection pigments have an average particle size d_{50} in the range from 0.01 to 5 micron; and

g) at least one of corrosion inhibitor which are not present in particle form.

135. (new) A mixture according to claim 134, wherein said post-crosslinking compound d) is selected from the group consisting of isocyanate, blocked isocyanate, isocyanurate and a melamine resin.

136. (new) A mixture according to claim 134, wherein the sum of the weight content of a) relative to the sum of the total pigmentation $\Sigma((a) + (f))$ is 30 to 99 wt.%.

137. (new) A mixture according to claim 134, wherein on addition to the mixture, the corrosion protection particles f) have an average particle size d_{50} in the range from 0.01 to 5 μm.

138. (new) A mixture according to claim 134, wherein the corrosion protection particles f) have the particle size passage value d_{80} in the range from 0.03 to 6 µm.

139. (new) The mixture of claim 104, wherein the metal particles selected from the group consisting of tungsten, tantalum and niobium or an alloy thereof.

140. (new) A process comprising the steps of:

applying the mixture of claim 139 to a substrate; and

drying or at least partly crosslinking the mixture to yield a coated substrate having, wherein the dry coating on the substrate has an average layer thickness in the dry state of not more than 6 µm, measured microscopically on a ground cross-section, and wherein the process is chromium free.